

REMARKS

Applicants respectfully request reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow.

No claims are currently being canceled.

Claims 1, 7, 9-12, 14-20, 22, 27, 30-33 and 35-44 are currently being amended.

No claims are currently being added.

This amendment amends claims in this application. A detailed listing of all claims that are, or were, in the application, irrespective of whether the claims remain under examination in the application, is presented, with an appropriate defined status identifier.

After amending the claims as set forth above, claims 1, 4-7, 9-20, 22, 25-28 and 30-44 are now pending in this application.

In the Office Action, claims 1, 4-7, 9-15, 19, 20, 22, 25-28, 30-36 and 40-42 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,999,646 to Tamagaki in view of U.S. Patent No. 6,134,567 to Nakkiran et al.; claims 16, 37 and 44 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Tamagaki in view of Nakkiran et al. and further in view of U.S. Patent No. 6,141,443 to Nakao et al.; and claims 17, 18, 38, 39 and 43 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Tamagaki in view of Nakkiran et al. and further in view of Fan et al. (Segmentation and Classification of Mixed Text/Graphics/Image Documents). These rejections are traversed, to the extent that they may be applied to the presently pending claims, for at least the reasons given below.

First of all, the present invention determines the attribute of an input image, as described on page 16, lines 23-27 of the specification. This feature is explicitly recited, for example, by way of the discriminating means of presently pending claim 1. Then, the present invention determines whether or not the extracted predetermined region is a rectangular discriminative region, as

explicitly recited by way of the determining means of presently pending claim 1. See, for example, step ST502 described on page 22, lines 3-6 of the specification and shown in Figure 5 of the drawings. If a rectangular discriminative region is found, the present invention performs the operation described on page 22, lines 16-24 of the specification (corresponding to steps ST503 and 162 as shown in Figure 5 of the drawings). That is, where the attribute of the region discriminated by the discriminating means is either a dot photo region or a continuous photo region, the present invention converts the image to lower resolution or increases the compression rate. Where the attribute of the region is a region containing only black characters, the present invention converts multi-valued data into binary data.

The image processing apparatus of the present invention detects the attribute of an image region and determines whether or not a rectangular region can be extracted from the document image. If a rectangular region exists, image processing related to the resolution, compression ratio, number of colors, etc., is executed in accordance with the attribute of the rectangular region. In this manner, the present invention performs image processing based on the presence or absence of a rectangular region and the type of region determined based on the attribute.

Turning now to the cited art of record, Tamagaki does not disclose or suggest image conversion processing in accordance with the present invention, wherein image conversion processing (one of the resolution, compression ratio, and number of colors is selected as that image conversion processing) is performed in the present invention in accordance with the presence/absence of the rectangular region and the attribute of the rectangular region.

The Office Action asserts that Figures 1A-1C, Figure 3, column 10, lines 42-67 and column 11, lines 1-13 of Tamagaki discloses a step of determining whether or not image data of a region can be discriminated by rectangle. However, this assertion is incorrect. Rather, column 10, line 42 to column 11, line 13 of Tamagaki merely discloses that a characteristic image is selected on the basis of histogram data stored together with data on read images, whereby

features of a text document are extracted on the assumption that that data is a text document when the image consists mainly of a black area (text area) and a white area (background), and much of the histogram data is composed of pixels for the black and white areas. In Tamagaki, features of images of a document are extracted to produce histogram data (see column 11, lines 3-5 of Tamagaki), and an image to be test copied is selected on the basis of the extracted features. In Tamagaki, one or more types of images are selected based on whether most of the image is black and white as in the case of text documents, or whether the image is a gray-scale image as in the case of tone photos (see column 11, lines 10-13 of Tamagaki). This, with all due respect, has nothing at all to do with determining, on the basis of the distribution of region attributes, whether or not the type of image data is a rectangular discriminative region, as explicitly recited in claim 1.

It is noted that Nakkiran discloses performing conversion with respect to the resolution of an image. However, Nakkiran does not disclose or suggest anything further. For example, Nakkiran does not perform conversion related to a compression ratio or the number of colors. In addition, Nakkiran does not determine whether or not a rectangular region exists.

Thus, even if these references are combined, the combination does not teach or suggest an image processing apparatus which, like that of the present invention, executes appropriate processing automatically for various types of document images. Accordingly, since none of the other cited art of record rectifies the above-mentioned deficiencies of Tamagaki and Nakkiran et al., presently pending claim 1, as well as its dependent claims, are patentable over the cited art of record.

Presently pending independent claims 22 and 42 recite features similar to those recited in presently pending claim 1, and thus those claims, as well as their dependent claims, are patentable over the cited art of record.

Applicants believe that the present application is now in condition for allowance, and an early indication of allowance is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

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Date

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